DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

1A15 Revision 33 PIPER PA-24 PA-24-250 PA-24-260 PA-24-400

October 1, 1997

AIRCRAFT SPECIFICATION NO. 1A15

Type Certificate Holder The New Piper Aircraft, Inc.

2926 Piper Drive

Vero Beach, Florida 32960

I. - Model PA-24, 4 PCLM (Normal Category), Approved June 20, 1957.

Engine Lycoming O-360-A1A (See Item 111 for eligible relocated engines)

<u>Fuel</u> 91/96 min. grade aviation gasoline

Engine Limits All operations, 2700 r.p.m. (180 hp)

Airspeed Limits V_{ne} (Never Exceed) 202 mph (175 knots)

V_{le} (Landing Gear Extended)

S/N 24-2 through 24-102: 125 mph (108 knots)

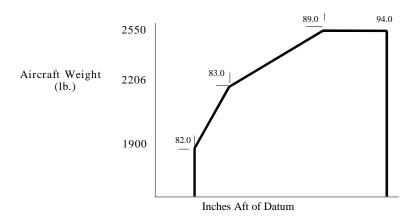
S/N 24-1, and 24-103 through

24-3687: 150 mph (130 knots)

Center of Gravity (+94.0)(+89.0)2550 lb. to at (C. G.) Range (+94.0)2206 lb. (+83.0)to at (Gear Extended) (+82.0)(+94.0)1900 lb. or less to at

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)



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Empty Weight C. G. Range None

Maximum Weight 2550 lb.

Number of Seats (2 at +85, 2 at +118.5)

Maximum Baggage Rear compartment at (+142)

100 lb. (S/N 24-2 through 24-102)

200 lb. (S/N 24-1, and 24-103 through 24-3687)

Fuel Capacity 60 gallons at (+90) (Two wing tanks)

(+24 when Item 111 is installed.) Oil Capacity 2 gallons at (+25)

neutral position)

Control Surface Movements	Main Surfaces	Aileron	19°	Up	15°	Down
		Horizontal T.E.				
		S/N 24-2				
		through 24-102:	11°	Up	5°	Down
		S/N 24-1, 24-103				
		through 24-3687:	13°	Up	5°	Down
		Rudder	25°	Left	25°	Right
		Flap			27°	Down
	Anti-Servo tab (with stabilizer in				

Serial Numbers Eligible 24-1 through 24-3687.

Required Equipment In addition to the pertinent required basic equipment specified in CAR 3, the following

items of equipment must be installed: 1(a), 1(b), 101, 102, 103, 201(a), 205, 206(a),

Up

13°

Down

301(a), 302(a), and 401(a), 401(d) or 401(k).

II. - Model PA-24-250, 4 PCLM (Normal Category), Approved April 16, 1958.

Engine Lycoming O-540-A1A (See Item 109 for optional engines)

<u>Fuel</u> 91/96 min. grade aviation gasoline

All operations, 2575 r.p.m. (250 hp) **Engine Limits**

Airspeed Limits (Never Exceed)*** 203 mph (177 knots) (Maximum Structural Cruise) 180 mph (156 knots)

V_{ne} V_{no} V_{le} V_p V_{fe} (Landing gear extended) 150 mph (130 knots) 144 mph (Maneuvering) (125 knots) (Flaps Extended) 125 mph (108 knots)

*** See Item 618 for approved speed increase.

Center of Gravity (C.G.) range

S/N 24-1, 24-103 through 24-2298, except 24-2003:

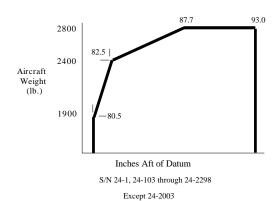
(+87.7) to (+93.0) at 2800 lb. (+82.5) to (+93.0) at 2400 lb. (+80.5) to (+93.0) at 1900 lb.

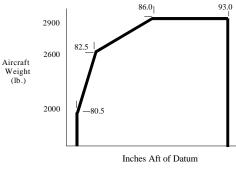
S/N 24-2003, 24-2299 through 24-3687:

(+86.0) to (+93.0) at 2900 lb. (+82.5) to (+93.0) at 2600 lb. (+80.5) to (+93.0) at 2000 lb.

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)





S/N 24-2003, 24-2299 through 24-3687

Empty Weight C. G. Range

None

<u>Maximum Weight</u> 2800 lb. (S/N 24-1, 24-103 through 24-2298, except 24-2003)

2900 lb. (S/N 24-2003, 24-2299 through 24-3687)

Number of Seats 4 (2 at +85, 2 at +118.5)

Maximum Baggage 200 lb. at (+142) (Rear compartment)

Fuel Capacity S/N 24-1, 24-103 through 24-2843, except 24-2563: 60 gallons at (+90) (Two 30 gallon wing tanks)

S/N 24-2563, 24-2844 through 24-3687:

56 gallons at (+90) (Two 28 gallon wing tanks)

See NOTE 1 for unusable fuel. See Item 112 for auxiliary fuel tanks.

Oil Capacity 3 gallons at (+28)

Control Surface Movements Main Surfaces 19° Up 15° Down Aileron Horizontal T.E. S/N 24-1, 24-103 through 24-2843, except 24-2563: 13° Up Down S/N 24-2563, 24-2844 through 24-3687: 14° Down Up Rudder 25° Left 25° Right Flap S/N 24-1, 24-103 through 24-2843

S/N 24-1, 24-103 through 24-2843 except 24-2563: 27° Down S/N 24-2563, 24-2844 through 24-3687: 32° Down <u>Control Surface Movements</u> Anti-Servo tab (with stabilizer in neutral position)

S/N 24-1, 24-103 through

24-2843, except 24-2563: 7° Up 13° Down S/N 24-2563, 24-2844 through

24-3687: 7° Up 15° Down

Serial Numbers Eligible 24-1, 24-103 through 24-3687.

Required Equipment In addition to the pertinent required basic equipment specified in CAR 3, the following

items of equipment must be installed:

3(a) and 3(b), 103, 106, 107(a) or 107(b), 201(a), 202(b), 205, 206(a), 301(a) or 301(b),

302(a), 401(c), or 401(f), or 401(n), or 401(s), or 401(v), 603, 617(a), 401(bz) When Item 109(e) is installed, substitute Items 113 and 114(a) or 114(b) in place of

Items 106 and 107(a) or 107(b), respectively.

III. Model PA-24-400, 4 PCLM (Normal Category), Approved December 27, 1963.

Engine Lycoming IO-720-A1A or IO-720-A1B

Fuel 100/130 min. grade aviation gasoline

Engine Limits All operations, 2650 r.p.m. (400 hp)

Airspeed Limits V_{ne} (Never Exceed) 250 mph (219 knots)

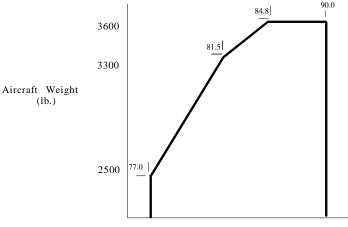
 Center of Gravity
 (+84.8)
 to
 (+90)
 at 3600 lb.

 (C. G.) Range
 (+81.5)
 to
 (+90)
 at 3300 lb.

 (Gear Extended)
 (+77.0)
 to
 (+90)
 at 2500 lb. or less

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)



Inches Aft of Datum

Empty Weight C. G. Range None

Maximum Weight 3600 lb.

Number of Seats 4 (2 at +85, 2 at +118.5) (S/N 26-2 through 26-124) 4 (2 at +85, 2 at +120.5) (S/N 26-125 through 26-148)

Maximum Baggage 200 lb. at (+142) (Rear compartment)

Fuel Capacity 130 gallons at (+90) (Two 30 gallon wing tanks) (124 gallons usable)

130 gallons at (+94) (Two 35 gallon wing tanks) (124 gallons usable)

See NOTE 1 for unusable fuel data.

Oil Capacity 17 quarts at (+21) (12 quarts usable)

Control Surface Main Surfaces Aileron 19° Up 15° Down Up Movements Stabilator (L.E.) 4.5° 15.5° Down Rudder 25° 25° Right Left

Flap 38° Down Anti-Servo Tab 4.5° Up 9° Down

(Stabilizer Neutral)

Serial Numbers Eligible 26-2 through 26-148.

Required Equipment In addition to the pertinent required basic equipment specified in CAR 3, the following

items of equipment must be installed: 7(a), 7(b), 115, 116, 118, 119, 201(c), 205,

206(b), 302(a), 305, 401(ag), 603, and 605.

IV. Model PA-24-260, 4 PCLM (Normal Category), Approved June 19, 1964, or 6 PCLM (Normal Category), Approved June 30, 1965, and April 11, 1969 when Item 611 is installed (See NOTE 2(m) placard for 6 PCLM Limitations.).

Engine Lycoming O-540-E4A5 (See Item 109(f) and 109(g) for additional optional engines and

109(h) for optional turbocharged engines)

<u>Fuel</u> 91/96 min. grade aviation gasoline (normally aspirated engine)

100/130 min. grade aviation gasoline (turbocharged engine)

Engine Limits All operations, 2700 r.p.m. (260 hp)

Airspeed Limits V_{ne} (Never Exceed)*** 203 mph (177 knots) V_{ne} (Maximum Structural Cruise) 180 mph (156 knots)

 v_{no} (Maximum Structural Cruise) 180 mph (156 knots) V_{le} V_p V_{fe} 150 mph (130 knots) (Landing Gear Extended) 144 mph *(125 knots) (Maneuvering) (Flaps Extended) 125 mph (108 knots) (Maneuvering) 150 mph **(130 knots)

S/N 24-3642, 24-4000 through 24-4782, and 24-4784 through 24-4803.

^{**} S/N 24-4783, 24-4804 through 24-5034.

^{***} See Item 618 for approved speed increase.

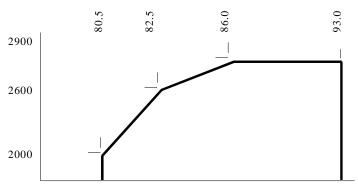
Center of Gravity
(C. G.) Range
(Gear Extended)

S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299:

(+86.0) to (+93.0) at 2900 lb. (+82.5) to (+93.0) at 2600 lb. (+80.5) to (+93.0) at 2000 lb. or less

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)



Inches Aft of Datum

S/N 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803:

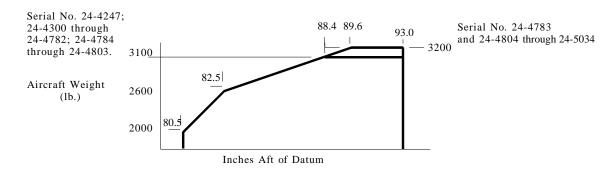
(+88.4) to (+93.0) at 3100 lb. (+82.5) to (+93.0) at 2600 lb. (+80.5) to (+93.0) at 2000 lb. or less

S/N 42-4783, and 24-4804 through 24-5034 (with normally aspirated engine only):

(+89.6) to (+93.0) at 3200 lb. (+82.5) to (+93.0) at 2600 lb. (+80.5) to (+93.0) at 2000 lb. or less

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)

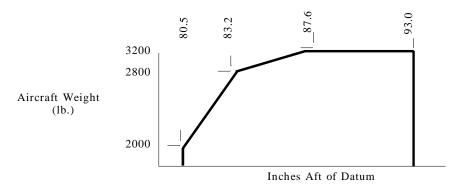


Center of Gravity
(C. G.) Range
Gear Extended

S/N 24-4783, and 24-4804 through 24-5034 (with turbocharged engines only):

Straight line variation between points given.

Moment due to retracting of landing gear (1266 in. -lb.)



Empty Weight C. G. Range None

<u>Maximum Weight</u> S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299:

2900 lb.

S/N 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803:

3100 lb. - Takeoff 2945 lb. - Landing

S/N 24-4783, and 24-4804 through 24-5034:

3200 lb. - Takeoff 3040 lb. - Landing

Number of Seats 4 (2 at +85, 2 at +120.5)

 $\ensuremath{\mathrm{S/N}}$ 24-4247, and 24-4300 through 24-5034 when Item 611 is installed:

6 (2 at +85, 2 at +120.5, 2 at +148)

<u>Maximum Baggage</u> S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299:

200 lb. at (+142) (Rear compartment)

S/N 24-4247, and 24-4300 through 24-5034:

250 lb. at (+142) (Max. baggage and/or passenger allowance in baggage area,

including seats)

Fuel Capacity 56 gallons at (+90) (Two 28 gallon wing tanks)

See NOTE 1 for unusable fuel. See Item 112 for auxiliary fuel tanks.

Oil Capacity 3 gallons at (+28)

Control SurfaceMain SurfacesAileron19° Up15° DownMovementsStabilator (L.E.)14° Up4° DownRudder25° Left25° Right

Rudder 25° Left 25° Right Flap 32° Down

Anti-Servo Tab

(Stabilizer Neutral) 7° Up 15° Down

Serial Numbers Eligible 24-3642, 24-4000 through 24-5034.

<u>Required Equipment</u> In addition to the pertinent required basic equipment specified in CAR 3, the following

items of equipment must be installed:

S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299:

 $4(b), \, 9(a) \ or \ 9(c), \, 9(b), \, 103, \, 106, \, 107(c), \, 107(d) \ or \ 107(e), \, 201(d), \, 202(b), \, 205, \, 206(a), \, 200(a), \, 200$

302(a), 305, 401(ah), 603, 617(a), and 401(bz).

When Item 109(f) is installed, substitute Items 113 and 114 and 401(ak) in place of Items

106, 107(c), 107(d), or 107(e), and 401(ah), respectively.

S/N 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803:

4(b), 9(a), 9(b), 103, 106, 107(e), 201(d), 202(b), 205, 206(a), 124, 305, 401(av), 603,

617(a), and 401(bz).

When Item 109(f) is installed, substitute Items 113, 114(d), and 401(ba) in place of 106,

107(e), and 401(av), respectively.

S/N 24-4783, and 24-4804 through 24-5034 (with normally aspirated engine): 9 (b), 9(d) or 9(g), (9e), 109(g), 113, 114(d), 120(a) or 120(c), 201(d), 202(b), 205,

206(a), 302(a), 305(c), 401(bo), 603, 617(a), and 410(bz).

S/N 24-4783, and 24-4804 through 24-5034 (with turbocharged engine):

9(b), 9(f) or 9(h), 9(e), 109(h), 115, 120(b), 121(a), 122(a), 201(d), 202(b), 205, 206(a),

124, 302(a), 305(c), 401(bp), 603, 616(a), 617(a), and 401(bz).

Specifications Pertinent to All Models

<u>Datum</u> 79 in. ahead of the wing leading edge at Wing Station 65.5 (intersection point of tapered

edge with straight leading edge).

<u>Leveling Means</u> Level from two rivnuts located right side above baggage door.

On S/N 24-4247, and 24-4300 through 24-5034 still on right side of fuselage, but

baggage door moved to left side of fuselage.

Certification Basis Type Certificate No. 1A15 (CAR 3, effective November 1, 1949, including Amendments

3-1 through 3-12, effective April 13, 1954).

<u>Production Basis</u> Approved for manufacture of spare parts only under Production Certificate No. 206.

Equipment: A plus (+) or minus (-) sign preceding the weight of an item indicates net weight change when that item is

installed.

Propeller and Propeller Accessories

	-		PA-24	PA-24-250	PA-24-400	PA-24-260
1.	(a) Propeller - Hartzell constant speed controllable, hub	63 lb.	(+3)			
	model HC92ZK-8D, blades model 8447A-12A					
	Pitch: High 27°, Low 13° at 30 in. station					
	Diameter Not over 72¼ in., not under 70.5 in.					
	(b) Governor Assembly: Woodward 210185, 210260,	5 lb.	(+39)			
	210305, or Hartzell D1-1, D1-5.					

(c) Deleted May 5, 1958. (Included in Item 4)

<u>Pro</u>	peller and Propeller Accessories (cont.)		D. 44	D	D	D. 0400
2.	(a) Propeller - McCauley constant speed controllable, hub model 2D36C14, blades model 78KM-4. Pitch: High 27.5°, Low 12.7° at 30 in. station Diameter: Not over 74 in., not under 72 in. Item 401(b) or 401(1) required.	60 lb.	<u>PA-24</u> (+3)	<u>PA-24-250</u>	<u>PA-24-400</u>	<u>PA-24-260</u>
	(b) Governor Assembly: Woodward 210185, 210250, 210260, 210305 or Hartzell D1-1, D1-5.	5 lb.	(+39)			
3.	(a) Propeller - Hartzell constant speed controllable, hub model HC82XK-1D or HC-A2XK-1, blades model 8433-7, or hub Model HC-A2VK-1, blades Model V8433N-7. Pitch: High 31° to 33°, Low 14.5° at 30 in. station Diameter: Not over 77 7/16 in., not under 76 in. Placard required: (For O-540-A1A engine only) "Avoid continuous operation between 2225 and 2275 r.p.m."	63 lb.		(+1.5)		
	(b) Governor Assembly: Woodward 210185 or 210250 or Hartzell B-4-2.	5 lb.		(+10)		
4.	(a) Hartzell spinner dome C-888 and bulkhead adapter C-885 (Eligible on Items 1(a) and 3(a) only)	3 lb.	(+3)	(+1.5)		
	(b) Piper spinner dome and bulkhead adapter	3 lb.	(+3)	(+1.5)		(+1.5)
5.	(a) Propeller - McCauley constant speed controllable, hub model 2D36C28, blades model 80MM-6. Pitch: High 32°, Low 15.7° at 30 in. station Diameter: Not over 74 in., not under 73 in. Placard required: (For O-540-A1A engine only) "Avoid continuous operation between 2225 and 2275 rpm." Item 401(e), 401(g) or 401(o) required.	60 lb.		(+1.5)		
	(b) Woodward hydraulic governor assembly Model A210185 per Piper Dwg. 21764-3 or Model A210305 per Piper Dwg. 21764-4 when Item 5(a) is installed.	5 lb.		(+10)		
6.	Deleted October 24, 1960.					
7.	(a) Propeller - Hartzell constant speed controllable, hub model HC-A3VK-4, blades model V8433-7. Pitch: High 36°, Low 14° at 30 in. station Diameter: Not over 77 5/8 in., not under 75 5/8 in. See NOTE 2(k)	88 lb.			(-3.5)	
	(b) Governor Assy Hartzell F-4-1 per Piper Dwg. 24622-2.	6 lb.			(+3.5)	
8.	Spinner Dome per Piper Dwg. 22752-2 and spinner Bulkhead Adapter per Piper Dwg. 22774-2.	4 lb.			(-3.5)	

Propeller and Propeller Accessories (cont.)					
9. (a) Propeller - Hartzell constant speed controllable, hub model HC-C2YK-1A, blades model 8467-7R. Pitch: High 32° to 34°, Low 15° at 30 in. station Diameter: Not over 77 in., not under 75 in. NOTE: If it becomes necessary to reduce the propeller diameter below 77 inches, for maintenance or rebalancing purposes, a placard stating "Avoid continuous operation between 2500 and 2600 r.p.m. above 25 inch manifold pressure" must be displayed near the manifold pressure gauge.	54 lb.	<u>PA-24</u>	<u>PA-24-250</u>	PA-24-400	PA-24-260 (+1.5)
(b) Governor Assy. Hartzell F-4-4 per Piper Dwg. No. 24622-5 or F-4-4A per Piper Dwg. No. 24622-10	6 lb.				(+10)
(c) Propeller - Hartzell constant speed controllable, hub model HC-C2YK-1B, blades model 8467-7R Pitch: High 32° to 34°, Low 15° at 30 in. station Diameter: Not over 77 in., not under 75 in. NOTE: If it becomes necessary to reduce the propeller diameter below 77 inches, for maintenance or rebalancing purposes, a placard stating "Avoid continuous operation between 2500 and 2600 r.p.m. above 25 inch manifold pressure", must be displayed near the manifold pressure gauge.	56 lb.				(+1.5)
(d) Propeller - Hartzell constant speed controllable, hub model HC-E2YR-1B, blades model 8467-7R Pitch: High 32° to 34°, Low 15° at 30 in. station Diameter: Not over 77 in., not under 75 in.	59 lb.				(-3.4)
(e) Spinner dome Piper P/N 26326 with bulkhead adapter Piper P/N 26313	4 lb.				(-4.1)
(f) Propeller - Hartzell constant speed controllable, hub model HC-E2YR-1B, blades model 8467-7R Pitch: High 32° to 34°, Low 13.5° (+.3°, -0°) at 30 in. station Diameter: Not over 77 in., not under 75 in.	59 lb.				(-3.4)
(g) Propeller - Hartzell constant speed controllable, hub Model HC-E2YR-1BF, blades Model F8467-7R Pitch: High 32° to 34°, Low 15° at 30 in. station Diameter: Not over 77 in., not under 75 in.	59 lb.				(-3.4)
(h) Propeller - Hartzell constant speed controllable, Hub Model HC-E2YR-1BF, Blades Model F8467-7R Pitch: High 32° to 34°, Low 13.5° (+.3°, -0°) at 30 in. station	59 lb.				(-3.4)

(+1.5)

Diameter: Not over 77 in., not under 75 in.

760-452.

(i) Spinner Dome and Bulkhead Installation per Piper Kit 5 lb.

Engir	ne and Engine Accessories - Fuel and Oil System		PA-24	PA-24-250	PA-24-400	PA-24-260
101.	Fuel pump, electric auxiliary, Bendix Model 476087 or 478360	2 lb.	(+38)			
102.	1 1 2					
	(a) AC No. 5594068	3 lb.	(+33)			
	(b) AC No. 5623467 (Lycoming P/N 74060), AC No. 5656880 (Lycoming P/N 74082) or AC No. 6440295 (Lycoming P/N 75246)	1.5 lb.	(+33)			
	110 110. 0110255 (Eyeoming 1/11 /52 10)					
103.	Oil radiator, Harrison Model AP07AU06-03	3 lb.	(+12)	(+10.5)		(+10.5)
104.	Starter, Delco-Remy, Model 1109673 or 1109689, 12 volt geared (2.27:1)	19 lb.	(+15)			
105.	Vacuum pump					
	(a) Pesco Model 3P-194-F Type B-11 (b) Deleted February 12, 1959	4 lb.	(+33)	(+39)		
	(c) Garwin G-455L	4 lb.	(+33)	(+39)		
	(d) Airborne Mechanisms 113A1, 113A5 or 200CC	4 lb.	(+33)	(+39)	(+43)	(+39)
106.	2 fuel pumps, elec. aux. Bendix Model 476087 or 478360. Required except when Item 109(e) or 109(f) is installed.	2 lb. each		(+43)		(+60)
107.	First source on since drivers					
107.	Fuel pump, engine-driven Required except when Item 109(e) or 109(f) is installed.					
	(a) AC No. 5594605	4 lb.		(+39.5)		
	(b) AC No. 5623467 (Lycoming P/N 74060) or	1.5 lb.		(+39.5)		
	AC No. 5656880 (Lycoming P/N 74082)	1.5 16.		(137.3)		
	(c) AC No. 6440152 (Lycoming P/N 74798)	1.5 lb.				(+39.5)
	(d) AC No. 6440174	2 lb.				(+39.5)
	(e) AC No. 6440295	2 lb.				(+39.5)
108.	(a) Starter, Delco-Remy Model 1109695, 1109504, or 1109511; 12 Volt, Geared 3.38:1. Model 1109511 is	18 lb.		(+13.5)		(+13.5)
	eligible for installation on Model PA-24-260 only. (b) Starter, Prestolite Model MZ-4206, 12 Volt, Geared	17 lb.				(+12.5)
	3.38:1	17 10.				(+13.5)
109.	Optional engines (Lycoming)					
		Neg.Wt.Ch.		Elig.		
		Neg.Wt.Ch.		Elig.		
		Neg.Wt.Ch.		Elig.		
	(d) O-540-A1D5 (Item 401(f), 401(n) and 401(s)	Neg.Wt.Ch.		Elig.		
	Dwg. No. 23144) (Items 113, 114(a) or 114(b)	Neg. Wt.Ch.		Elig.		
		Use Actual Wt. Ch.				Elig.

Engir	ne and Engine Accessories - Fuel and Oil System (cont.)					
109.		se Actual	<u>PA-24</u>	PA-24-250	PA-24-400	PA-24-260 Elig.
`	(h) IO-540-R1A5 (Turbocharged - Items 122(a) required) Us	t. Chg. se Actual t. Chg.				Elig.
110	Carburetor air filter, Fram Paper Filter No. CA-161-PL No.	eg.Wt.Ch.	Elig.	Elig.		Elig.
111.		t. Change	Elig.	ocated when I	tem 111 is ins	talled:
	Item Arm Item 1(a) (+1.5) 102 1(b) (+35) 103 2(a) (+1.5) 104 2(b) (+35) 105 4 (+1.5) 301(a) 6(a) (+1.5) 301(b) 6(b) (+35)	Arm (+32.5) (+10.5) (+13.5) (+31.5) (+11.5) (+11.5)				
112.	Two 15 gallon auxiliary wing fuel tanks. Eligible on Models PA-24-250 and PA-24-260, S/N 24-2003, 24-2299 through 24-5034.	13 lb.	<u>PA-24</u>	PA-24-2 (+97)	50 <u>PA-24-40</u>	00 <u>PA-24-260</u> (+97)
113.	Fuel Pump, boost, rotary, motor-driven (a) Bendix No. 480518-1 or 480528 (b) Dukes No. 4140-00-218 Required with Items 109(e), 109(f) and 109(g).	5 lb. 2 lb.		(+60) (+60)		(+60) (+60)
114.	Fuel Pump - Engine Driven. Required with Items 109(e) and 109(f). (a) AC No. 5656696A (b) AC No. 6440160 (Lycoming No. 74999) (c) AC No. 5656999 (Lycoming No. 75131) (d) AC No. 6440296	2 lb. 2 lb. 2 lb. 2 lb.		(+39.5 (+39.5		(+39.5) (+39.5) (+39.5) (+39.5)
115.	Fuel Pump, engine driven, Lear Siegler No. RG17980, Lycoming No. 74547	1 lb.			(+43)	(+39.5)
116.	Oil radiator, 2 required, Harrison Model AP13AU06-01	3 lb. ea			(+39)	
117.	Starter, Delco-Remy Model 1113471, Lycoming No. 72279, 12V, geared 3.00:1	35 lb.			(+12)	
118.	Induction air filter, Fram Paper Filter No. CA-173PL	1 lb.			(+10)	
119.	(a) Fuel pump, boost rotary motor-driven, Bendix No. 480533	5 lb.			(+60)	
	(b) Fuel pump-boost-elec. Airborne Mfg. Co. No. 2B6-26	6. 3.7 lb.			(+60)	

Engine	and Engine Accessories - Fuel and Oil System (cont'd)					
120.	(a) Oil radiator - Harrison Model AP09AU06-02, Piper P/N 16943	2.4 lb.	<u>PA-24</u>	<u>PA-24-250</u>	PA-24-400	PA-24-260 (+45.8)
	(b) Harrison Model AP18AU06-03, Piper P/N 43378	3.6 lb.				(+45.8)
	(c) Harrison Model AP09AU06-04, Piper P/N 32912	2.4 lb.				(+45.8)
121.	(a) Fuel Pump, elec. aux. (boost) Dukes No. 4140-00-SPC	2 lb.				(+60)
122.	(a) Turbocharger Rayjay No. RJ0080-102 (2 required when Item 109(h) is installed)	13.5 lb. ea				(+26.0)
123.	Manually Controlled Heated Alternate Engine Induction Air System					
	(a) Installation per Piper Dwg. 27186 Placards in NOTE 2(w) are required.	3 lb.				(+27.2)
	(Eligible S/N 24-3642, 24-4000 through 24-4299, except 24 (Eligible S/N 24-4247, 24-4300 through 24-4803, except 24			-		
124.	Full Flow Oil filter and Adapter AC No. 5578941, Lycoming No. 74911, Lycoming No. 75528 or AC No. 5578770	2 lb.				(+40)
Landin	g Gear					
201.	(a) Two main wheel assemblies (with No. 3000-250 brake assemblies) 6.00-6, Type III, Cleveland Aircraft Products No. 3070.	8 lb. ea.	(+108.5)	(+108.5)		
	(b) Two main wheel assemblies (with No. 30-41 brake assemblies) 6.006, Type III, Cleveland Aircraft Products No. 40-58.	8 lb. ea.	(+108.5)	(+108.5)		
	(c) Two main wheel assemblies (with No. 2-852 brake assemblies) 6.00-6, Type III, B.F. Goodrich No. 3-1038.	11 lb.			(+108.5)	
	(d) Two main wheel assemblies (with No. 30-41 brake assemblies) 6.00-6, Type III, Cleveland Aircraft Products No. 40-84.	8 lb. ea.				(+108.5)
	(e) Two main wheel assemblies (with No. 30-23 brake assemblies) 6.00-6, Type III, Cleveland Aircraft Products No. 40-90.	9.5 lb. ea.			(+108.5)	
202.	(a) Two main 4-ply rating tires 6.00-6, Type III with regular tubes.	9 lb. ea.	(+108.5)			
	(b) Two main 6-ply rating tires 6.00-6, Type III with regular tubes.	9.5 lb. ea.		(+108.5)	(+108.5)	(+108.5)

Landin	g Gear (cont.)					
205	(-) O	~ II	PA-24	PA-24-250	PA-24-400	PA-24-260
205.	(a) One nose wheel 6.00-6, Type III, Cleveland Aircraft Products No. 38501.	5 lb.	(+30.7)	(+30.7)	(+30.7)	(+30.7)
	(b) One nose wheel 6.00-6, Type III, Cleveland Aircraft Products No. 40-76(B).	3.8 lb.	(+30.7)	(+30.7)	(+30.7)	(+30.7)
206.	(a) One nose wheel 4-ply rating tire 6.00-6, Type III with regular tube.	9 lb.	(+30.7)	(+30.7)		(+30.7)
	(b) One nose wheel 6-ply rating tire 6.00-6, Type III with regular tube.	9 lb.			(+30.7)	(+30.7)
207.	 (a) Landing Gear Emergency Extension Security Kit No. 760-627. Flight Manual Supplement, Piper Report 1769, required. For Model PA-24-260, eligible on S/N 24-3642, 24-4000 through 24-4803, except 24-4783, only. 	Neglect Weight Change	Elig.	Elig.	Elig.	Elig.
	cal Equipment					
301.	Generators (a) One 12 volt, 35 amp generator, Delco Remy Model 1101900, with bracket and voltage regulator No. 1118704.	18 lb.	(+13)	(+11.5)		
	(b) One 12 volt, 50 amp. generator, Delco Remy Model 1101915, with bracket and voltage regulator No. 1119224. Eligible on S/N 24-1, 24-103 through 24-3687 only.	18 lb.	(+13)	(+11.5)		
302.	Dottom					
302.	Battery (a) Wisconsin Storage Battery, Reading R35, Bowers B-34, one 12 volt, 33 ampere-hour					
	For S/N 24-2 through 24-102:	27 lb.	(+46)			
	For S/N 24-1, 24-103 through 24-3687:	27 lb.	(+162)	(+162)		
	For S/N 26-2 through 26-148:	27 lb.			(+162)	
	For S/N 24-3642, and 24-4000 through 24-4246:	27 lb.				(+162)
	For S/N 24-4248 through 24-4299, and 24-4783:	27 lb.				(+162)
	For S/N 24-4804 through 24-5034: For S/N 24-4247, 24-4300 through 24-4782, and	27 lb.				(+162)
	24-4784 through 24-4803:	27 lb.				(+46)
303.	Landing Light, two G.E. Model 4509	2 lb.	(+86)	(+86)	(+86)	(+86)
304.	Anti-Collision Light					
	(a) Rotating Beacon - Grimes No. D-7080-1-12 or D-7080A-1-12	2 lb.	(+161)	(+161)	(+161)	(+161)
	(b) Rotating Beacon - Whelen No. WRM-12, WRMA-12 or WRML-12	2 lb.	(+161)	(+161)	(+161)	(+161)
	(c) Strobe - Red Whelen Model HS Installation Piper Dwg. 27054. Eligible on S/N 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement 401(bt) or 401(bu) and placard per NOTE 2(u) required with this installation.	2.9 lb.				(+161.7)

Electrica	al Equipment (cont.)					
			PA-24	PA-24-250	PA-24-400	PA-24-260
305.	Alternator 12 V., 70 ampere					
	(a) Delco-Remy No. 1100660 (Lycoming No. 74319)	12 lb.			(+7)	(+11.5)
	(b) Delco-Remy No. 1100717	12 lb.			(+7)	(+11.5)
	(c) Prestolite No. ALX-8403	12.2 lb.				(+11.5)
306.	Piper Elec. Trim per Piper Dwg. 24889 and 26754.	4 lb.				(+163)
	Not eligible when Item 402 (c) is installed.					
307.	Anti-Collision Light (Wing Tips)					
	(a) Strobe - White Whelen Model HG-T2. Piper	4 lb.				(+143.2)
	Installation Dwg. 27060. Eligible on S/N 24-4783,					
	and 24-4804 through 24-5034 only. Flight Manual					
	Supplement 402(bt) or 401 (bu) and placard per NOTE					
	2(v) required with this installation.					

Interior Equipment

- 401. (a) DMCR Approved Airplane Flight Manual dated June 19, 1957, revised March 7, 1958. Eligible for S/N 24-2 through 24-102 only.
 - (b) DMCR Approved Airplane Supplement No. 1, revised November 11, 1958, to Airplane Flight Manual Item 401(a). Required when Item 2(a) or 6(a) is installed.
 - (c) DMCR Approved Airplane Flight Manual dated April 16, 1958. Eligible for Model PA-24-250, S/N 24-1, 24-103 through 24-332.
 - (d) DMCR Approved Airplane Flight Manual dated March 7, 1958. Eligible Model for PA-24, S/N 24-103 through 24-1683 only.
 - (e) DMCR Approved Airplane Flight Manual Supplement No. 1 dated May 5, 1958, to Airplane Flight Manual for Model PA-24-250, Item 401(c). Required when Item 5(a) is installed.
 - (f) DMCR Approved Airplane Flight Manual No. 997 dated July 10, 1958. Eligible for Model PA-24-250, S/N 24-1, 24-103 through 24-2002, 24-2004 through 24-2298 only. Required when Item 109(a), (b), (c), or (d) is installed.
 - (g) DMCR Approved Airplane Flight Manual Supplement No. 1 dated July 10, 1958, revised August 15, 1958, to Airplane Flight Manual No. 997 for Model PA-24-250, Item 401(f). Required when Item 5(a) is installed.
 - (h) DMCR Approved Airplane Flight Manual Supplement No. 2 dated July 31, 1958, to Airplane Flight Manual No. 997 for Model PA-24-250, Item 401(f). Required when Item 402(a), Piper AutoControl, is installed.
 - (i) DMCR Approved Airplane Flight Manual Supplement No. 2 dated July 31, 1958, to Airplane Flight Manual for Model PA-24, Item 401(d). Required when Item 402(a), Piper AutoControl, is installed.
 - (j) DMCR Approved Airplane Flight Manual Supplement No. 2, dated July 31, 1958, to Airplane Flight Manual Supplement No. 973 for Model PA-24-250, Item 401(c). Required when Item 402(a), Piper AutoControl, is installed.
 - (k) DMCR Approved Airplane Flight Manual No. 1047, dated December 11, 1959. Eligible for Model PA-24, S/N 24-1684 through 24-3687 only. Required when Item 111 is installed.
 - DMCR Approved Airplane Flight Manual Supplement No. 1, dated December 11, 1959, to Airplane Flight Manual No. 1047 for Model PA-24, Item 401(k). Required when Item 2(a) is installed.
 - (m) DMCR Approved Airplane Flight Manual Supplement No. 2, dated December 11, 1959, to Airplane Flight Manual No. 1047 for Model PA-24, Item 401(k). Required when Item 402(a) is installed. Revision dated June 28, 1962, required when Course Selector directional gyro is installed.

- 401. (n) DMCR Approved Airplane Flight Manual No. 1127, dated September 27, 1960. Eligible for Model PA-24-250, S/N 24-2003, 24-2299 through 24-2562, and 24-2564 through 24-2843 only. Required when Item 112 is installed.
 - (o) DMCR Approved Airplane Flight Manual Supplement No. 1 dated September 27, 1960, to Airplane Flight Manual No. 1127 for Model PA-24-250, Item 401(n). Required when Item 5(a) is installed.
 - (p) DMCR Approved Airplane Flight Manual Supplement No. 2, dated September 27, 1960, to Airplane Flight Manual No. 1127 for Model PA-24-250, Item 401 (n). Required when Item 402(a), Piper AutoControl, is installed.
 - (q) DMCR Approved Airplane Flight Manual Supplement No. 3, dated December 13, 1960, to Airplane Flight Manual No. 1127 for Model PA-24-250, Item 401(n). Required when Item 402(b), Piper Altimatic, is installed.
 - (r) DMCR Approved Airplane Flight Manual Supplement No. 3, dated December 13, 1960, to Airplane Flight Manual No. 1047 for Model PA-24, Item 401(k). Required when Item 402(b), Piper Altimatic, is installed.
 - (s) DMCR Approved Airplane Flight Manual No. 1179, dated September 18, 1961. Eligible for Model PA-24-250, S/N 24-2563, 24-2844 through 24-3687, except when Item 109(e) is installed.
 - (t) DMCR Approved Airplane Flight Manual Supplement No. 1, dated September 18, 1961, to Airplane Flight Manual No. 1179 for Model PA-24-250, Item 401(s). Required when Item 402(a), Piper AutoControl, is installed. Revision dated June 28, 1962, required when Course Selector directional gyro is installed.
 - (u) DMCR Approved Airplane Flight Manual Supplement No. 2, dated September 18, 1961, to Airplane Flight Manual No. 1179 for Model PA-24-250, Item 401(s). Required when Item 402(b), Piper Altimatic, is installed.
 - (v) DMCR Approved Airplane Flight Manual No. 1220, dated February 15, 1962. Eligible for Model PA-24-250, S/N 24-2563, and 24-2844 through 24-3687 only. Required when Item 109(e) is installed.
 - (w) DMCR Approved Airplane Flight Manual Supplement No. 1, dated February 15, 1962, to Airplane Flight Manual No. 1220 for Model PA-24-250, Item 401(v). Required when Item 402(a), Piper AutoControl, is installed with Item 109(e). Revision dated June 28, 1962, required when Course Selector directional gyro is installed.
 - (x) DMCR Approved Airplane Flight Manual Supplement No. 2, dated February 15, 1962, to Airplane Flight Manual No. 1220 for Model PA-24-250, Item 401(v). Required when Item 402(b), Piper Altimatic, is installed with Item 109(e).
 - (y) DMCR Approved Airplane Flight Manual Supplement No. 4, dated August 7, 1962, to Airplane Flight Manual No. 1047 for Model PA-24, Item 401(k). Required when Item 402(c), Piper Altimatic II, is installed.
 - (z) DMCR Approved Airplane Flight Manual Supplement No. 4, dated August 7, 1962, to Airplane Flight Manual No. 1127 for Model PA-24-250, Item 401(n). Required when Item 402(c), Piper Altimatic II, is installed.
 - (aa) DMCR Approved Airplane Flight Manual Supplement No. 3, dated August 7, 1962 to Airplane Flight Manual No. 1179 for Model PA-24-250, Item 401(s). Required when Item 402(c), Piper Altimatic II, is installed.
 - (ab) DMCR Approved Airplane Flight Manual Supplement No. 3, dated August 7, 1962, to Airplane Flight Manual No. 1220 for Model PA-24-250, Item 401(v). Required when Item 402(c), Piper Altimatic II, is installed with Item 109(e).
 - (ac) DMCR Approved Airplane Flight Manual Supplement No. 5, dated August 15, 1962, to Airplane Flight Manual No. 1047 for Model PA-24, Item 401(k). Required when Item 402(d), Piper AutoControl II, is installed.
 - (ad) DMCR Approved Airplane Flight Manual Supplement No. 5, dated August 15, 1962, to Airplane Flight Manual No. 1127 for Model PA-24-250, Item 401(n). Required when Item 402(d), Piper AutoControl II, is installed.
 - (ae) DMCR Approved Airplane Flight Manual Supplement No. 4, dated August 15, 1962, to Airplane Flight Manual No. 1179 for Model PA-24-250, Item 401(s). Required when Item 402(d), Piper AutoControl II, is installed.

- 401. (af) DMCR Approved Airplane Flight Manual Supplement No. 4, dated August 15, 1962, to Airplane Flight Manual No. 1220 for Model PA-24-250, Item 401(v). Required when Item 402(d), Piper AutoControl II, is installed with Item 109(e).
 - (ag) DMCR Approved Airplane Flight Manual No. 1295, dated December 27, 1963. Eligible for Model PA-24-400 only.
 - (ah) DMCR Approved Airplane Flight Manual No. 1333, dated June 19, 1964. Eligible for Model PA-24-260 (Carburetor Model), S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299, only.
 - (ai) DMCR Approved Airplane Flight Manual Supplement No. 2, dated June 19, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1333, for Model PA-24-260, Item 401(ah). Required when Item 402(d), Piper AutoControl II, is installed.
 - (aj) DMCR Approved Airplane Flight Manual Supplement No. 1, dated June 19, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1333, for Model PA-24-260, Item 401(ah). Required when Item 402(c), Piper Altimatic II, is installed.
 - (ak) DMCR Approved Airplane Flight Manual No. 1334, dated June 19, 1964. Eligible for Model PA-24-260 (Fuel Injection Model), S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299, only.
 - (al) DMCR Approved Airplane Flight Manual Supplement No. 1, dated June 19, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1334, for Model PA-24-260, Item 401(ak). Required when Item 402(c), Piper Altimatic II, is installed.
 - (am) DMCR Approved Airplane Flight Manual Supplement No. 2, dated June 19, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1334, for Model PA-24-260, Item 401(ak). Required when Item 420(d), Piper Auto Control II, is installed.
 - (an) DMCR Approved Airplane Flight Manual Supplement No. 1, dated May 5, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1295, for Model PA-24-400, Item 401(ag). Required when Item 402(c), Piper Altimatic II, is installed.
 - (ao) DMCR Approved Airplane Flight Manual Supplement No. 2, dated May 5, 1964, revised July 16, 1964, to Airplane Flight Manual No. 1295, for Model PA-24-400, Item 401(ag). Required when Item 402(d), Piper AutoControl II, is installed.
 - (ap) DMCR Approved Airplane Flight Manual Supplement No. 3, dated February 19, 1965, to Airplane Flight Manual No. 1295, for Model PA-24-400, Item 401(ag). Required when Item 607(a) is installed.
 - (aq) DMCR Approved Airplane Flight Manual Supplement No. 3, dated February 19, 1965, to Airplane Flight Manual No. 1333, for Model PA-24-260, Item 401(ah). Required when Item 607(a) is installed.
 - (ar) DMCR Approved Airplane Flight Manual Supplement No. 3, dated February 19, 1965, to Airplane Flight Manual No. 1334, for Model PA-24-260, Item 401(ak). Required when Item 607(a) is installed.
 - (as) DMCR Approved Airplane Flight Manual Supplement No. 4, dated April 30, 1965, to Airplane Flight Manual No. 1295, for Model PA-24-400, Item 401(ag). Required when Item 609(a) is installed.
 - (at) DMCR Approved Airplane Flight Manual Supplement No. 4, dated April 30, 1965, to Airplane Flight Manual No. 1333, for Model PA-24-260, Item 401 (ah). Required when Item 609(a), Oxygen System, is installed.
 - (au) DMCR Approved Airplane Flight Manual Supplement No. 4, dated April 30, 1965, to Airplane Flight Manual No. 1334, for Model PA-24-260, Item 401(ak). Required when Item 609(a), Oxygen System, is installed.
 - (av) DMCR Approved Airplane Flight Manual No. 1358, dated June 30, 1965, revised December 21, 1965, and January 6, 1966. Eligible for Model PA-24-260 (Carburetor Model), S/N 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803, only.

- 401. (aw) DMCR Approved Airplane Flight Manual Supplement No. 1, dated June 30, 1965, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401 (av). Required when Item 402(c), Piper Altimatic II, is installed.
 - (ax) DMCR Approved Airplane Flight Manual Supplement No. 2, dated June 30, 1965, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 402(d), Piper AutoControl II, is installed.
 - (ay) DMCR Approved Airplane Flight Manual Supplement No. 3, dated June 30, 1965, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 607(a) or 607 (b), Exhaust Gas Temperature Indicator, is installed.
 - (az) DMCR Approved Airplane Flight Manual Supplement No. 4, dated June 30, 1965, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 609(b), Oxygen System, is installed.
 - (ba) DMCR Approved Airplane Flight Manual No. 1359, dated June 30, 1965, revised December 21, 1965, and January 6, 1966. Eligible for Model PA-24-260 (Fuel Injection Model), S/N 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803, only.
 - (bb) DMCR Approved Airplane Flight Manual Supplement No. 1, dated June 30, 1965, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 402(c), Piper Altimatic II, is installed.
 - (bc) DMCR Approved Airplane Flight Manual Supplement No. 2, dated June 30, 1965, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 402(d), Piper AutoControl II, is installed.
 - (bd) DMCR Approved Airplane Flight Manual Supplement No. 3, dated June 30, 1965, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 607(a) or 607(b), Exhaust Gas Temperature Indicator, is installed.
 - (be) DMCR Approved Airplane Flight Manual Supplement No. 4, dated June 30, 1965, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 609(b), Oxygen System, is installed.
 - (bf) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 5, dated May 27, 1966, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 402(e), Piper AutoControl II (Model AK161), is installed.
 - (bg) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 5, dated May 27, 1966, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 402(e), Piper AutoControl III (Model AK161), is installed.
 - (bh) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 6, dated August 5, 1966, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 402(f), Piper Altimatic III, is installed.
 - (bi) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 6, dated August 5, 1966, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401(ba). Required when Item 402(f), Piper Altimatic III, is installed.
 - (bj) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 7, dated August 7, 1967, to Airplane Flight Manual No. 1358, for Model PA-24-260, Item 401(av). Required when Item 607(c), Exhaust Gas Temperature Indicator, is installed.
 - (bk) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 7, dated August 7, 1967, to Airplane Flight Manual No. 1359, for Model PA-24-260, Item 401 (ba). Required when Item 607(c), Exhaust Gas Temperature Indicator, is installed.
 - (bl) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 1 to Airplane Flight Manual No. 1545. Required when Item 402(g), AutoControl III, is installed.

- 401. (bm) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 2 to Airplane Flight Manual No. 1545. Required when Item 402(h), Altimatic IIIB, is installed.
 - (bn) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 3 to Airplane Flight Manual No. 1545. Required when Item 609(b), Oxygen System, is installed.
 - (bo) D.O.A. No. EA-1 Approved Airplane Flight Manual No. 1545, dated April 11, 1969. Eligible for Model PA-24-260, S/N 24-4783, and 24-4804 through 24-5034 only.
 - (bp) D.O.A. No. EA-1 Approved Airplane Flight Manual No. 1640, dated May 25, 1970. Eligible Model for PA-24-260 (equipped with Turbocharger), S/N 24-4783, and 24-4804 through 24-5034 only.
 - (bq) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 1 to Airplane Flight Manual No. 1640. Required when Item 402(g), AutoControl III, is installed.
 - (br) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 2 to Airplane Flight Manual No. 1640. Required when Item 402(h), Altimatic IIIB, is installed.
 - (bs) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 3 to Airplane Flight Manual No. 1640. Required when Item 609(b), Oxygen System, is installed.
 - (bt) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 4 to Airplane Flight Manual No. 1640. Required when Item 304(c) or 307(a) strobe light is installed.
 - (bu) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 4 to Airplane Flight Manual No. 1545. Required when Item 304(c) or 307(a) strobe light is installed.
 - (bv) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 5 to Airplane Flight Manual No. 1334. Required when Item 123, Manually Controlled Heated Alternate Engine Induction Air, is installed.
 - (bw) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 8 to Airplane Flight Manual No. 1359. Required when Item 123, Manually Controlled Heated Alternate Engine Induction Air, is installed.
 - (bx) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 5 to Airplane Flight Manual No. 1545. Required when Item 402(i), Altimatic IIIB1, is installed.
 - (by) D.O.A. No. EA-1 Approved Airplane Flight Manual Supplement No. 5 to Airplane Flight Manual No. 1640. Required when Item 402(i), Altimatic IIIB1, is installed.
 - (bz) D.O.A. No. EA-1 approved Airplane Flight Manual Supplement No. 1770 for Models PA-24-250 and PA-24-260 Airplane Flight Manuals dated August 8, 1972, revised September 5 and September 27, 1972. (Copies of Supplement No. 1770 dated August 8, 1972, with no revision date are eligible and approved for use. Copies with two revision dates (September 5 and September 27, 1972) are eligible and approved for use. Copies with only one revision date (September 5, 1972) are not eligible for use.)

Automatic Pilot

Autom	atic Pilot					
402.	(a) Piper AutoControl, Model AK066, manufactured by Mitchell Industries, Inc. in accordance with FAR 21.303, installed in accordance with Piper Dwg. 21780 or 22465. (Weight does not include weight of gyros) AutoControl may be overpowered manually by an exertion of 16 lb. of force on the control wheel. S/N eligible are 24-1, and 24-103 through 24-3687 only. Flight Manual Supplement Items 401(h), 401(i), 401(j), 401(m), 401(p), 401(t), or 401(w) required with this installation. Course Selector directional gyro option not eligible on those aircraft to which Items	+4.5 lb.	<u>PA-24</u> (+56.5)	PA-24-250 (+56.5)	<u>PA-24-400</u>	<u>PA-24-260</u>
	401(h), 401(i), 401(j), or 401(p) are applicable. (b) Piper Altimatic, Model AK083, manufactured by Mitchell Industries, Inc. in accordance with FAR 21.303, installed in accordance with Piper Dwg. 22545. (Weight does not include weight of gyros) Altimatic may be overpowered as follows: Exertion of 16 lb. of force on the control wheel for roll servo, exertion of 20 lb. of force fore or aft on the control wheel for pitch servo, and in addition, a force of 40 lb. on the control wheel to completely disengage the pitch servo from the control system. S/N eligible are 24-2003, 24-2203, and 24-2299 through 24-3687 only. Flight Manual Supplement items 401(q), 401(r), 401(u), or 401(x) required with this installation.	+10.5 lb.	(+57.8)	(+57.8)		
	(c) Piper Altimatic II, Model AK089, manufactured by Mitchell Industries, Inc. in accordance with FAR 21.303, installed in accordance with Piper Dwg. 23587 or 24997. (Weight does not include weight of gyros) Altimatic may be overpowered as follows: Exertion of 16 lb. of force on the control wheel for roll servo, exertion of 20 lb. of force fore or aft on the control wheel for pitch servo, and in addition, a force of 40 lb. on the control wheel to completely disengage the pitch servo from the control system. S/N eligible are 24-2003, 24-2203, and 24-2299 through 24-5034 only. Flight Manual Supplement Items 401(y), 401(z), 401(aa), 401(ab), 401(aj), 401(al), 401(an), 401(aw), or 401(bb) required with this installation.	+13.1 lb. +17.1 lb.	(+56.5)	(+56.5)	(+56.5)	(+81.4)
	(d) Piper AutoControl II, Model AK065E manufactured by Mitchell Industries, Inc. in accordance with FAR 21.303, installed in accordance with Piper Dwg. 23619. (Weight does not include weight of gyros) AutoControl II may be overpowered manually by an exertion of 16 lb. of force on the control wheel. S/N eligible are 24-2003, 24-2203, and 24-2299 through 24-5034 only. Flight Manual Supplement Items 401(ac), 401(ad), 401(ae), 401(af), 401(ai), 401(am), 401(ao), 401(ax), or 401(bc) required with this installation.	+4.6 lb.	(+55.3)	(+55.3)		(+55.3)

						Page 21
Autom	atic Pilot (cont.)					
			PA-24	PA-24-250	PA-24-400	PA-24-260
402.	(e) Piper AutoControl III, Model AK161 manufactured by Mitchell Industries, Inc. in accordance with FAR 21.303, installed in accordance with Piper Dwg. 25676 (Weight does not include weight of gyros). AutoControl III may be overpowered manually by an exertion of 12 lb. of force on the control wheel. S/N eligible are 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803 only. Flight Manual Supplement Items 401(bf) or 401(bg) required with this installation.	+4 lb.				(+113)
	(f) Piper Altimatic III, installed in accordance with Piper Dwg. 25708 (Weight does not include weight of gyros). S/N eligible are 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803 only. Flight Manual Supplement Items 401(bh) or 401(bi) required with this installation.	+18.9 lb.				(119.5)
	(g) Piper AutoControl III, installed in accordance with Piper Dwg. 26735 (Weight does not include gyros). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Item 401(bl) or 401(bq) required.	+4 lb.				(+113)
	(h) Piper Altimatic IIIB, installed in accordance with Piper Dwg. 26884 (Weight does not include gyros). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Items 401(bm) or 401(br) required.	+19.3 lb.				(+119)
	(i) Piper Altimatic IIIB1, installed in accordance with Piper Dwg. 27333-2 (Weight includes Gyros and Turn and Bank Instrument). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Items 401(bx) or 401(by) required.	+20.2 lb.				(94.0)
Missell	lancous Equipment					
601.	Heated Pitot Head-Kollsman, Model No. 372D-01, 12 volt.	+1 lb.	(+99)	(+99)	(+99)	
602.	Heated Pitot Tube Assembly, Piper Dwg. 21301	+1 lb.	(+99)	(+99)	(+99)	(+99)
603.	Stall warning indicator installation installed in accordance with Piper Dwg. 21754.	Negl. Wt.		Required	Required	Required
604.	Stabilizer guard installation in accordance with Piper Dwg. 22004.	+1 lb.	(+255)	(+255)		(+255)

	24-4784 through 24-4803 only. Flight Manual Supplement Items 401(bf) or 401(bg) required with this installation.					
	(f) Piper Altimatic III, installed in accordance with Piper Dwg. 25708 (Weight does not include weight of gyros). S/N eligible are 24-4247, 24-4300 through 24-4782, and 24-4784 through 24-4803 only. Flight Manual Supplement Items 401(bh) or 401(bi) required with this installation.	+18.9 lb.				(119.5)
	 (g) Piper AutoControl III, installed in accordance with Piper Dwg. 26735 (Weight does not include gyros). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Item 401(bl) or 401(bq) required. 	+4 lb.				(+113)
	(h) Piper Altimatic IIIB, installed in accordance with Piper Dwg. 26884 (Weight does not include gyros). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Items 401(bm) or 401(br) required.	+19.3 lb.				(+119)
	(i) Piper Altimatic IIIB1, installed in accordance with Piper Dwg. 27333-2 (Weight includes Gyros and Turn and Bank Instrument). S/N eligible are 24-4783, and 24-4804 through 24-5034 only. Flight Manual Supplement Items 401(bx) or 401(by) required.	+20.2 lb.				(94.0)
<u>Mis</u> 601	 Leellaneous Equipment Heated Pitot Head-Kollsman, Model No. 372D-01, 12 volt. 	+1 lb.	(+99)	(+99)	(+99)	
602	Heated Pitot Tube Assembly, Piper Dwg. 21301	+1 lb.	(+99)	(+99)	(+99)	(+99)
603	Stall warning indicator installation installed in accordance with Piper Dwg. 21754.	Negl. Wt.		Required	Required	Required
604	Stabilizer guard installation in accordance with Piper Dwg. 22004.	+1 lb.	(+255)	(+255)		(+255)
605	Manifold pressure gauge. NOTE 2(k) placard required on Model PA-24-400.	+l lb.			Required	See Item 9(a) or 9(c)
606	. (a) Piper Radio Coupler per Piper Dwg. 24997 or 23619.	+.5 lb.			(+66)	(+66)
	(b) Piper Radio Coupler per Piper Dwg. 25678.NOTE 2(p) placard required.	+.5 lb.				(+66)
	(c) Piper Radio Coupler per Piper Dwg. 26825. NOTE 2(r) placard required.	+.5 lb				(+66)

Miscel	laneous Equipment (cont.)					
60 7	() =		<u>PA-24</u>	PA-24-250		PA-24-260
607.	(a) Exhaust Gas Temperature Indicator per STC SA788WE, installed per Piper Drawing 25287.	+1 lb.			(+55)	(+55)
	(b) Exhaust Gas Temperature Indicator per STC SA522SW, installed per Piper Drawing 25667.	+1 lb.				(+55)
	(c) Exhaust Gas Temperature Indicator per STC SA1315WE, installed per Piper Drawing 26333.	+2 lb.				(+54)
	(d) Exhaust Gas Temperature Indicator per STC SA1315WE, installed per Piper Drawing 26851.	+2 lb.				(+54)
608.	(a) Alternate instrument static air source installed per Piper Dwg. 25301 and 26723. NOTE 2(1) placards required.	Negl. Wt.			Elig.	Elig.
609.	(a) Oxygen System Installation per Piper Dwg. 25342. For Model PA-24-260, eligible only on S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299. NOTE 2(q) placards required.	+41.5 lb.			(+161.2)	(+161.2)
	 (b) Oxygen System Installation per Piper Dwg. 25542 or 25724 or 26682. For Model PA-24-260, eligible only on S/N 24-4247, and 24-4300 through 24-5034. NOTE 2(q) placards required. 	+41.5 lb.				(+161.2)
610.	(a) Auxiliary Power Receptacle Installation per Piper Dwg. 24628 (Weight includes Jumper Cable Assembly). For Models PA-24, PA-24-250 and PA-24-260, eligible only on S/N 24-2299 through 24-4246, and 24-4248 through 24-5034.	+7 lb.	(+153.3)	(+153.3)	(+153.3)	(+153.3)
	(b) Auxiliary Power Receptacle Installation per Piper Dwg. 25584 (5 lb. Jumper Cable included - carried in baggage compartment). Eligible only on S/N 24-4247, and 24-4300 through 24-5034.	+6.4 lb.				(+121.5)
611.	(a) Optional Seating Seat Installation - Fifth and Sixth per Piper Dwg. 25302 and 26602. Eligible only on S/N 24-4247, and 24-4300 through 24-5034. NOTE 2(m) placard required.	+7.5 lb. ea				(+148)
612.	(a) Front Seat - Vertically adjustable - Left and/or Right per Piper Drawing 26971.	+21.3 lb.				(+84.8)
613.	(a) Piper Glide Slope Coupler per Piper Dwg. 26729. Eligible only on S/N 24-4783, and 24-4804 through 24-5034. NOTE 2(s) placard required.	+1.5 lb.				(+61.3)
614.	(a) Shoulder Harness per Piper Dwg. 27006.					
	Left Front and/or Right Front.	+6 lb. ea.				(+100)
	Left Center and/or Right Center	+6 lb. ea.				(+100)
615.	(a) Brake Installation - dual per Piper Dwg. 27062. Eligible only on S/N 24-4783, and 24-4804 through 24-5034.	+5 lb.				(+58)

Miscella	aneous Equipment (cont.)					
616.	(a) Manifold Pressure Gauge per Piper Dwg. 27149.	+1 lb.	<u>PA-24</u>	PA-24-250	PA-24-400	PA-24-260 (+66)
617.	(a) Balance Weight - Rudder. Install in accordance with Piper Dwg. 27972 or Piper Kit 760 705. Flight Manual Supplement Item 401(bz) and placard NOTE 2(x) required on Models PA-24-250 and PA-24-260.	+4.5 lb.	(+272.0)	(+272.0)		(+272.0)
618.	Stabilator Modification. Modified in accordance with Piper Kit 760 747 instructions. Change V _{ne} speed to 227 m.p.h. and delete flight manual and placard specified with Item 617 (rudder balance weight) when Item 617 and Item 618 are both installed. NOTE: This speed change is not approved without installation of both items.	+7 lb.		(+260.0)		(+260)

- NOTE 1. Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification. The certificated empty weight and the corresponding center of gravity location must include unusable fuel (not included in fuel capacity) as follows: 24 lb. at (+90) for Model PA-24-250; S/N 24-2563, and 24-2844 through 24-3687; and for Model PA-24-260; and 36 lb. at (+90) for Model PA-24-400; S/N 26-2 through 26-148.
- NOTE 2. The following placards must be displayed:
 - (a) On the instrument panel in full view of the pilot: "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE AIRPLANE FLIGHT MANUAL. ACROBATICS MANEUVERS (INCLUDING SPINS) PROHIBITED."
 - (b) On floor at base of landing gear manual operating lever: "EMERGENCY GEAR HANDLE".
 - (c) On landing gear operating motor access door: "EMERGENCY GEAR EXTENSION. REMOVE COVER. EXTENSION INSTRUCTIONS ON REVERSE SIDE".
 - (d) At inside of cabin door: "ENGAGE LATCH BEFORE FLIGHT." (except Model PA-24-250, S/N 24-2844 through 24-3687; Model PA-24, S/N 24-3286 through 24-3687; PA-24-400, S/N 26-2 through 26-148; and Model PA-24-260).
 - (e) On baggage compartment (Model PA-24, S/N 24-2 through 24-103 only): "MAXIMUM BAGGAGE 100 POUNDS."
 - (f) On baggage compartment (for Models PA-24 and PA-24-250, S/N 24-1, 24-102 through 24-3687; for Model PA-24-400, S/N 26-2 through 26-148; and Model PA-24-260, S/N 24-3642, 24-4000 through 24-4246, and 24-4248 through 24-4299): "MAXIMUM BAGGAGE 200 POUNDS."

- NOTE 2. (g) Unless otherwise specified: On the instrument panel when Item 402(a) is installed. When the AutoControl autopilot is equipped with the zero heading directional gyro:
 - 1. Piper AutoControl (Operating Instructions)

"Piper AUTOCONTROL

TO ENGAGE: Push turn control at D. G. in the center knobs. Then push in engaging

control, rock wheel if necessary.

TO TURN: Move turn control in desired direction.

FOR HEADING

LOCK: Set D. G. at 0° pull out turn control knob. Use trim to maintain exact

0° heading."

2. On or adjacent to the autopilot engagement control knob:

"PIPER AUTOCONTROL. Push to engage. Disengage during takeoff and landing."

- 3. On or adjacent to the turn control: "TURN CONTROL. Pull for direction control on 0° heading only."
- 4. On the face of the directional gyro: "MODIFIED FOR PIPER AUTOCONTROL"

When the Auto Control autopilot is equipped with the Course Selector directional gyro:

1. Piper AutoControl (Operating Instructions)

TO ENGAGE: Push turn control at D. G. in the center knobs. Then push in engaging

control, rock wheel if necessary.

TO TURN: Move turn control in desired direction.

FOR HEADING

LOCK: Set course selector and D. G. at magnetic heading. Pull turn control knob.

Use trim knob to maintain heading."

2. On or adjacent to the autopilot engagement control knob:

"PIPER AUTOCONTROL. Push to Engage. Disengage during takeoff and landing."

3. On or adjacent to the autopilot turn control knob:

"TURN CONTROL. Pull for heading lock."

4. On or adjacent to the D. G. caging knob:

"PULL TO SELECT HEADING."

5. On the face of the directional gyro:

"PIPER COURSE SELECTOR."

NOTE 2. (h) Unless otherwise specified: On the instrument panel when Item 402(b) or 402(c) is installed.

1. On or adjacent to the D. G. caging knob:

"PULL TO SELECT HEADING."

2. Adjacent to the pitch control knob:

"PULL ALT. HOLD"

- 3. "Piper Altimatic Pilot Instructions
 - 1. Pilot off during takeoff and landing
 - 2. Pilot off above 180 M.P.H.

Normal Operations:

1. Refer to Flight Manual

Emergency:

- 1. Disengage Altimatic Controls
- 2. Altimatic Pilot may be over-powered manually."
- 4. Adjacent to the pitch control knob:

"UP DN"

- (i) Unless otherwise specified: On the instrument panel when Item 402(d) is installed. When the AutoControl II autopilot is equipped with the Zero Heading directional gyro:
 - 1. Piper AutoControl II (Operating Instructions)

"PIPER AUTOCONTROL II

TO ENGAGE: Push heading lock button to "OUT" position. Center turn-trim knob.

Engage roll.

TO TURN: Move turn-trim knob in desired direction.

FOR HEADING

LOCK: Set D. G. with magnetic compass, pull knob out, select desired heading, push

heading lock button to "IN" position. Use turn-trim knob to obtain exact

heading.

DISENGAGE: During takeoff and landing."

2. Adjacent to the autopilot engage knob:

"ROLL

PUSH TO ENGAGE"

3. Adjacent to the turn control:

"TURN-TRIM"

4. Adjacent to heading lock knob:

"HEADING LOCK"

5. Adjacent to the D. G. Caging knob:

"PULL TO SELECT HEADING"

6. On the face of the directional gyro: "PIPER COURSE SELECTOR."

- (j) On the fuel valve protector plate (Model PA-24-400, S/N 26-2 through 26-148 only):"DRAIN STRAINER FOR EACH TANK SELECT EACH TANK AND LIFT KNOB"
- (k) On instrument panel near manifold pressure gauge (required and eligible on Model PA-24-400 only): "DO NOT EXCEED 24 INCH MP BELOW 2000 RPM."

- NOTE 2. (I) In view of the pilot on Model PA-24-260 and Model PA-24-400 aircraft equipped with alternate instrument static air source, Item 608(a):
 - "INSTRUCTIONS FOR USE OF ALTERNATE STATIC SOURCE
 - IN CASE OF STATIC PRESSURE TUBE MALFUNCTION DUE TO ICE OR OTHER OBSTRUCTIONS CLOSE WINDOW AND ACTUATE ALTERNATE STATIC SOURCE VALVE.
 - 2. THE FOLLOWING AIRSPEEDS APPLY WHEN ALTERNATE STATIC SOURCE IS USED:

(On Model	INDICATOR READS	ACTUAL
PA-24-260 only, per	105 MPH IAS	100 MPH IAS
Piper Dwg. 25296)	136 MPH IAS	130 MPH IAS
	158 MPH IAS	150 MPH IAS
	178 MPH IAS	170 MPH IAS
(On Model	INDICATOR READS	ACTUAL
PA-24-400 only, per	103 MPH IAS	100 MPH IAS
Piper Dwg. 25297)	137 MPH IAS	130 MPH IAS
	158 MPH IAS	150 MPH IAS
	180 MPH IAS	170 MPH IAS

2. On instrument panel above alternate static source actuating valve:

"↓ALTERNATE STATIC SOURCE

PULL AFT TO OPEN"

(For Models PA-24-400 and PA-24-260, S/N 24-3642, 24-4000 through 24-4782, 24-4784 through 24-4803)

On throttle quadrant aft of alternate static source actuating valve:

OFF

ALT STATIC AIR

ON

(For Model PA-24-260, S/N 24-4783, and 24-4804 through 24-5034)

- (m) On baggage compartment (For Model PA-24-260, S/N 24-4247, and 24-4300 through 24-5034). "Maximum baggage and/or Passenger Weight 250 lb. in Baggage area, including seats. See Weight and Balance."
- (n) On inner surface of Emergency Exit door. "Emergency Exit", "Hold Knob Up", "Turn Latch Clockwise". Required on Model PA-24-260, S/N 24-4247, and 24-4300 through 24-5034.
- (o) Unless otherwise specified: On the instrument panel in front of the pilot when Item 402(f) is installed.
 - 1. On left control wheel:

"NOSE "DOWN TRIM" UP"

2. On left control wheel:

"AUTOFLITE PUSH "OFF""

3. On instrument panel:

"AUTOFLITE ON/OFF TRIM"

NOTE 2. (p) On instrument panel centered above Radio Coupler Switch:

"OMNI-1" "OFF" "OMNI-2"

(q) Required, when Item 609 is installed, at each Oxygen outlet:

"NO SMOKING WITH OXYGEN IN USE."

at oxygen control knob:

" PULL ON, OXYGEN"

(r) On instrument panel beside radio coupler switch

"A/P NAV SEL

ON

OFF

ON"

(s) On instrument panel beside the glide slope indicator light.

"G/S

ENGAGED"

- (t) On Model PA-24-260, S/N 24-4783, and 24-4804 through 24-5034, equipped with turbocharged engine (Item 109(h))
 - 1. On overhead panel:

"FUEL BOOST PUMP ON ABOVE 15,000' MSL AND 75% POWER"

"TURBOCHARGER OPERATION POWER LIMITS: TAKEOFF AND MAX. ONT. -29.0 MAP AT 2700 RPM"

"REDUCE V_{ne} 6 MPH PER 1000' ABOVE 18,000' MSL"

"FOR EMERGENCY DESCENT IDLE POWER GEAR DOWN IAS 150 MPH"

"OPERATION ABOVE 12,000' PROHIBITED WITHOUT SATISFACTORY OXYGEN SUPPLY AVAILABLE FOR ALL OCCUPANTS"

"FLIGHT OPERATION OVER 25,000' IS PROHIBITED"

2. On fuel filler doors: "100/130 OCTANE MINIMUM"

(u) On left window molding in full view of the pilot when Item 304(c) is installed:

"WARNING

TO AVOID OPTICAL ILLUSION AND SEVERE VERTIGO TURN ANTI-COLLISION LIGHTS OFF UPON ENTERING CLOUDS, FOG OR HAZE."

(v) On left window molding in full view of the pilot when item 307(a) is installed:

"<u>WARNING</u>

TURN OFF STROBE LIGHTS WHEN TAXING IN VICINITY OF OTHER AIRCRAFT, OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE.

STANDARD POSITION LIGHTS TO BE ON FOR ALL NIGHT OPERATIONS."

NOTE 2.

 $(w) \ \ 1. \quad \ On instrument panel in full view of the pilot:$

"CAUTION

This airplane is equipped with a manually controlled heated alternate engine induction air system. Alternate air is available only by pulling ALT AIR control full on. See Flight Manual Supplement."

2. On instrument panel above the induction air control:

"ALT AIR Pull Open"

(x) On airspeed indicator*:
"DO NOT EXCEED 203 MPH CAS"

- * For Models PA-24-250 and PA-24-260 unless Kit 760 705 and Kit 760 747 are installed.
- (y) On instrument panel (For Models PA-24-250 and PA-24-260 equipped with fuel injected engine Item 109(e), 109(f), 109(g) or 109(h)):

"WARNING - UNCOORDINATED MANEUVERS, INCLUDING LONG SIDE SLIPS AND FAST TAXI TURNS JUST PRIOR TO TAKEOFF, MAY CAUSE LOSS OF POWER, ESPECIALLY IF FUEL TANK IN USE IS LESS THAN HALF FULL."

(z) On instrument panel (Model PA-24-400):

"WARNING - UNCOORDINATED MANEUVERS, INCLUDING LONG SIDE SLIPS AND FAST TAXI TURNS JUST PRIOR TO TAKEOFF, MAY CAUSE LOSS OF POWER, ESPECIALLY IF FUEL TANK IN USE IS NOT FULL."

...END...